Small Business Innovation Research/Small Business Tech Transfer

Next Generation Thermal Management Materials: Boron Arsenide for Isotropic Diamond Like Thermal Conductivity - Affordable BAs

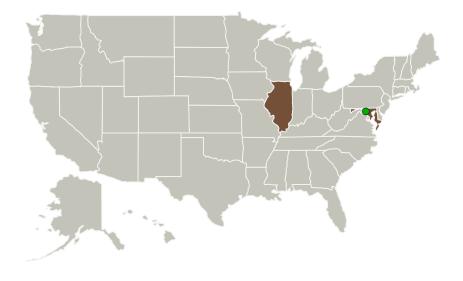


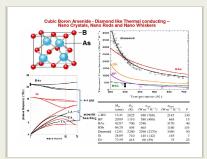
Processing Innovations, Phase I Completed Technology Project (2016 - 2016)

Project Introduction

The purpose of this SBIR phase I proposal is to design, develop and carry out the materials and process engineering studies to demonstrate the feasibility of processing the Next Generation High Thermal Conductivity Materials for thermal management. In these efforts - we propose the synthesis & processing of the Boron Arsenide in Nano Crystal, Nano rod and Nano Whisker forms that can provide an affordable simple material system with High Diamond like Thermal Conductivity to design and develop affordable next generation thermal management material systems. The proposed material that has been identified through First principle predictive computational studies as a cubic phase III-V boron semiconductor compound that is isotropic and can have a diamond like high thermal conductivity. The AMSENG seeks support from the NASA for the exploitation of the unique Next Generation new material systems to develop the needed processing science & engineering that can provide desired enhancement in the product performance along with the affordability for high heat flux acquisition and transport.

Primary U.S. Work Locations and Key Partners





Next Generation Thermal Management Materials: Boron Arsenide for Isotropic Diamond Like Thermal Conductivity -Affordable BAs Processing Innovations, Phase I

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Organizations Role **Type** Location **Performing Work** Applied Material Industry Schaumburg, **Systems** Lead Small Disadvantaged Illinois Engineering, Inc. Organization Business (SDB) (AMSENG) Supporting Greenbelt, Goddard Space NASA Center Maryland Organization Flight Center(GSFC)

Primary U.S. Work Locations	
Illinois	Maryland

Project Transitions

June 2016: Project Start

December 2016: Closed out

Closeout Documentation:

• Final Summary Chart(https://techport.nasa.gov/file/140399)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Applied Material Systems Engineering, Inc. (AMSENG)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Mukund S Deshpande



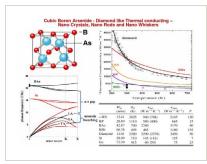
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Images



Briefing Chart Image

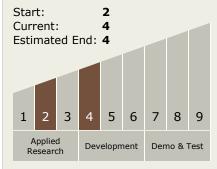
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(https://techport.nasa.gov/imag e/128947)

Final Summary Chart Image

Next Generation Thermal Management Materials: Boron Arsenide for Isotropic Diamond Like Thermal Conductivity - Affordable BAs Processing Innovations, Phase I Project Image (https://techport.nasa.gov/imag e/126775)





Technology Areas

Primary:

- TX14 Thermal Management Systems
 - □ TX14.2 Thermal Control
 Components and Systems
 □ TX14.2.2 Heat
 Transport

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System

